



## REMARKS

Claims remaining in the present patent application are Claims 1 – 20. Applicants respectfully request reconsideration of the present application in view of the remarks presented below.

### 35 USC § 103

Claims 1-2 and 8-10 stand rejected under 35 USC § 103(b) as being allegedly unpatentable over Farre et al. (US 6,460,172, “Farre”) in view of Cameron et al. (US 6,051,772, “Cameron”). Applicants have reviewed the cited references and respectfully assert that embodiments of the present invention as recited in Claims 1-2 and 8 are patentable over Farre in view of Cameron.

With respect to Claim 1, Applicants respectfully assert that Farre in view of Cameron fails to teach or fairly suggest the limitation “an on-chip analog amplifier ... producing an amplified output signal suitable for driving a loudspeaker external to the microcontroller chip” as recited by Claim 1.

The rejection concedes that Farre “does not specify driving a loudspeaker external to the microprocessor chip.” Applicants respectfully further assert that Farre does not fairly suggest this limitation. While Farre may teach “programmable analog cells,” there is no teaching within Farre that such cells are suitable, e.g., of sufficient drive capability and/or proper output impedance, for directly driving a loudspeaker.

Cameron fails to correct the deficiencies of Farre. In Figure 7, Cameron teaches a speaker 34 driven by an amplifier 33. Amplifier 33 is contained on sound card 20'. Sound card 20' is separate and distinct from CPU 10. Thus, amplifier 33 is separate and distinct from CPU 10. By teaching that an amplifier for driving a loudspeaker is separate and distinct from a CPU, Cameron actually teaches away from embodiments of the present invention that recite an amplifier for driving a loudspeaker is part of a microcontroller chip, as recited by Claim 1.

For this reason, Applicants respectfully assert that Claim 1 overcomes the rejections of record and respectfully solicit allowance of this Claim.

Additionally, with respect to Claim 1, the rejection alleges, “Farre does teach use of the microcontroller chip in a communication application (col. 6, lines 21-22).” The rejection implies that the taught “communications” somehow suggests analog audio output. Applicants respectfully traverse. This teaching of Farre is for a “communication switch” (a well known digital networking function) and is “implemented with the FIPSOC digital hardware...” (column 6 lines 20-22, emphasis added). Applicants respectfully assert that the cited portion of Farre does not suggest an audio communications application.

For this additional reason, Applicants respectfully assert that Claim 1 overcomes the rejections of record and respectfully solicit allowance of this Claim.

Applicants respectfully assert that Claims 2 – 10 overcome the rejections of record by virtue of their dependency, and respectfully solicit allowance of these Claims.

In addition with respect to Claim 2, Applicants respectfully assert that Farre in view of Cameron fails to teach or fairly suggest the limitation “the on-chip analog amplifier is situated adjacent one of the four corners” as recited by Claim 2.

The rejection alleges that Farre Figure 1 teaches or suggests this element. Applicants respectfully traverse. “Fig. 1 shows a general block diagram of the FIPSOC architecture of the invention” (column 3 lines 1-2, emphasis added). As is well understood by those of ordinary skill in the art, a block diagram has no inherent relationship to the physical layout of an integrated circuit. Consequently, neither Figure 1, nor the entirety of Farre, teach or fairly suggest this limitation. Cameron fails to remedy the deficiencies of Farre.

For this additional reason, Applicants respectfully assert that Claim 2 overcomes the rejections of record and respectfully solicit allowance of this Claim.

Claims 4-6, 11-12, 14-15 and 17 stand rejected under 35 USC § 103(b) as being allegedly unpatentable over Farre et al. (US 6,460,172, “Farre”) in view of Cameron et al. (US 6,051,772, “Cameron”) and further in view of Hirose et al. (US 6,900,780, “Hirose”). Applicants have reviewed the cited references and respectfully assert that embodiments of the present invention as recited in Claims 4-6, 11-12, 14-15 and 17 are patentable over Farre in view of Cameron and further in view of Hirose.

Applicants respectfully assert that Claims 4-6 overcome the rejections of record by virtue of their dependency, and respectfully solicit allowance of these Claims.

With respect to Claim 11, Applicants respectfully reiterate that Cameron actually teaches away from embodiments of the present invention that recite an amplifier for driving a loudspeaker is part of a microcontroller chip, as recited by Claim 11, for at least the rationale previously presented with respect to Claim 1.

Applicants respectfully assert that Claims 12-17 overcome the rejections of record by virtue of their dependency, and respectfully solicit allowance of these Claims.

Claim 3 stands rejected under 35 USC § 103(b) as being allegedly unpatentable over Farre et al. (US 6,460,172, “Farre”) in view of Cameron et al. (US 6,051,772, “Cameron”) and further in view of Dijkmans et al. (US 4,608,502, “Dijkmans”). Applicants have reviewed the cited references and respectfully assert that embodiments of the present invention as recited in Claim 3 are patentable over Farre in view of Cameron and further in view of Dijkmans.

Applicants respectfully assert that Claim 3 overcomes the rejections of record by virtue of its dependency, and respectfully solicit allowance of this Claim.

Further with respect to Claim 3, Applicants respectfully assert that the rejection’s citation of Dijkmans is improper because the reference is nonanalogous art per *In re Clay*, 966 F.2d 656, 659, 23 USPQ2d 1058, 1060-61 (Fed. Cir. 1992). Applicants understand Dijkmans to be directed to I2L gate circuits (Title). As is well known to one of ordinary skill in the art, integrated injection logic (I2L) is a bipolar technology comprising “vertical npn-transistor(s)”

(column 1, line 55). The technology is considered obsolete for all but the most specialized applications. Applicants respectfully note that Dijkmans was originally filed in 1983.

Applicants respectfully assert that Dijkmans would not commend itself to one of ordinary skill in the art in consideration of the problems solved by the present invention, due to the myriad well known differences between I2L technology and the technologies generally available for use in implementing microprocessors at the time of the present invention. Furthermore, there is no teaching in the cited art that I2L is suitable or desirable for use in a microcontroller chip as recited by Claims 1-10.

For this further reason, Applicants respectfully assert that Claim 3 overcomes the rejections of record, and respectfully solicit allowance of this Claim.

In addition with respect to Claim 3, Applicants respectfully assert that Farre in view of Cameron and further in view of Dijkmans fails to teach or fairly suggest the limitation “a switchable current source for selectively providing an increase in bias current to the on-chip analog amplifier” as recited by Claim 3.

The rejection concedes that Farre in view of Cameron does not specify a switchable current source, and Applicants respectfully further assert that Farre in view of Cameron does not fairly suggest such a switchable current source.

Applicants respectfully assert that Dijkmans fails to correct the deficiencies of Farre in view of Cameron. While Dijkmans may teach a circuit comprising a switchable current source,

Applicants respectfully assert that Dijkmans fails to teach or fairly suggest the limitation “a switchable current source for selectively providing an increase in bias current to the on-chip analog amplifier” as recited by Claim 3.

Dijkmans teaches, “a circuit arrangement having several signal paths which can be activated by a switchable current source (Abstract). In other words, Dijkmans teaches a switchable current source for selecting among several signal paths, not for “providing an increase in bias current to the on-chip analog amplifier” as recited by Claim 3.

For this additional reason, Applicants respectfully assert that Claim 3 overcomes the rejections of record and respectfully solicit allowance of this Claim.

Still further with respect to Claim 3, Applicants respectfully assert that Farre in view of Cameron and further in view of Dijkmans fails to teach or fairly suggest the limitation “a switchable current source for selectively providing an increase in bias current to the on-chip analog amplifier under control of the (on-chip) processor” as recited by Claim 3.

Applicants respectfully assert that Dijkmans is directed to I2L gate technology (Title). Applicants respectfully assert that there is no teaching in the cited art that I2L is suitable or desirable for use in a microcontroller chip as recited by Claims 1-9.

For this still further reason, Applicants respectfully assert that Claim 3 overcomes the rejections of record and respectfully solicit allowance of this Claim.

Claim 7 stands rejected under 35 USC § 103(b) as being allegedly unpatentable over Farre et al. (US 6,460,172, “Farre”) in view of Cameron et al. (US 6,051,772, “Cameron”) and further in view of Billings (US 5,248,843, Billings”). Applicants have reviewed the cited references and respectfully assert that embodiments of the present invention as recited in Claim 7 are patentable over Farre in view of Cameron and further in view of Billings.

Applicants respectfully assert that Claim 7 overcomes the rejections of record by virtue of its dependency, and respectfully solicit allowance of this Claim.

Further with respect to Claim 7, the rejection concedes that Billings teaches use of a speaker by a “sound chip.” Billings further teaches the sound chip is separate and distinct from a microcontroller, “the instrument 10 has two main electronic components: means 50 (sound chip) for producing sound, and a microcontroller 52” (column 5 lines 52-54). By teaching that a sound chip for driving a loudspeaker is separate and distinct from a microcontroller, Billings actually teaches away from embodiments of the present invention that recite an amplifier for driving a loudspeaker is part of a microcontroller chip, as recited by Claim 7.

For this further reason, Applicants respectfully assert that Claim 7 overcomes the rejections of record and respectfully solicit allowance of this Claim.

Claim 13 stands rejected under 35 USC § 103(b) as being allegedly unpatentable over Farre et al. (US 6,460,172, “Farre”) in view of Cameron et al. (US 6,051,772, “Cameron”) and further in view of Hirose et al. (US 6,900,780, “Hirose”) and further still in view of Dijkmans et al. (US 4,608,502, “Dijkmans”). Applicants have reviewed the cited references and respectfully

assert that embodiments of the present invention as recited in Claims 4-6, 11-12, 14-15 and 17 are patentable over Farre in view of Cameron and further in view of Hirose and further still in view of Dijkmans.

Applicants respectfully assert that Claim 13 overcomes the rejections of record by virtue of its dependency, and respectfully solicit allowance of this Claim.

In addition with respect to Claim 13, Applicants respectfully reiterate that Cameron actually teaches away from embodiments of the present invention that recite an amplifier for driving a loudspeaker is part of a microcontroller chip, as recited by Claim 13, for at least the rationale previously presented with respect to Claim 1.

For this additional reason, Applicants respectfully assert that Claim 13 overcomes the rejections of record, and respectfully solicit allowance of this Claim.

Further with respect to Claim 13, Applicants respectfully assert that Dijkmans actually teaches away from embodiments of the present invention that recite “an on-chip analog CMOS amplifier.” By teaching I2L technology that is incompatible with CMOS technology, Dijkmans teaches away from embodiments of the present invention that recite “an on-chip analog CMOS amplifier” as recited by Claim 13.

For this further reason, Applicants respectfully assert that Claim 13 overcomes the rejections of record, and respectfully solicit allowance of this Claim.

Claim 16 stands rejected under 35 USC § 103(b) as being allegedly unpatentable over Farre et al. (US 6,460,172, “Farre”) in view of Cameron et al. (US 6,051,772, “Cameron”) and further in view of Hirose et al. (US 6,900,780, “Hirose”) and further still in view of Billings (US 5,248,843, “Billings”). Applicants have reviewed the cited references and respectfully assert that embodiments of the present invention as recited in Claims 4-6, 11-12, 14-15 and 17 are patentable over Farre in view of Cameron and further in view of Hirose and further still in view of Billings.

Applicants respectfully assert that Claim 16 overcomes the rejections of record by virtue of its dependency, and respectfully solicit allowance of this Claim.

In addition, Applicants respectfully assert that Claim 16 overcomes the rejections of record for at least the rationale previously presented with respect to Claim 7, and respectfully solicit allowance of this Claim.

Claims 18-20 stand rejected under 35 USC § 103(b) as being allegedly unpatentable over Farre et al. (US 6,460,172, “Farre”) in view of Cameron et al. (US 6,051,772, “Cameron”) and further in view of Dijkmans et al. (US 4,608,502, “Dijkmans”) and further still in view of Hirose et al. (US 6,900,780, “Hirose”). Applicants have reviewed the cited references and respectfully assert that embodiments of the present invention as recited in Claims 4-6, 11-12, 14-15 and 17 are patentable over Farre in view of Cameron and further in view of Dijkmans and further still in view of Hirose.

With respect to Claim 18, Applicants respectfully assert that Dijkmans actually teaches away from embodiments of the present invention that recite “an on-chip tristateable CMOS amplifier.” By teaching I2L technology that is incompatible with CMOS technology and is furthermore not tristatable, Dijkmans teaches away from embodiments of the present invention that recite “an on-chip tristateable CMOS amplifier” as recited by Claim 18.

For this reason, Applicants respectfully assert that Claim 18 overcomes the rejections of record, and respectfully solicit allowance of this Claim.

Applicants respectfully assert that Claims 19-20 overcome the rejections of record by virtue of their dependency, and respectfully solicit allowance of these Claims.

## CONCLUSION

Claims remaining in the present patent application are Claims 1 – 20. Applicants respectfully request reconsideration of the present application in view of the remarks presented herein.

The Examiner is invited to contact Applicants' undersigned representative if the Examiner believes such action would expedite resolution of the present Application.

Please charge any additional fees or apply any credits to our PTO deposit account number: 23-0085.

Respectfully submitted,

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